

AMENDMENTS TO THE CLAIMS

1 1. (Currently Amended) A method of storing data into a database, the method
2 comprising:
3 a client application receiving data;
4 determining one or more routines that are associated with a type of said data, wherein
5 said one or more routines are implemented by a program that is external to
6 both said client application and a database server that manages said database;
7 invoking said one or more routines;
8 in response to said one or more routines being invoked, said program performing
9 steps comprising:
10 determining one or more first values that are specified in said data, wherein
11 said one or more first values correspond to one or more attributes of
12 said type; and
13 determining one or more second values that correspond to one or more hidden
14 columns of one or more tables in said database;
15 generating, based on said one or more first values and said one or more second
16 values, a data stream that conforms to a format of data blocks of said
17 database; and
18 writing said data into one or more data blocks in said database.

1 2. (Original) The method of Claim 1, further comprising:
2 in response to said one or more routines being invoked, said program performing
3 steps comprising:
4 creating a data structure that comprises:

5 one or more first elements that correspond to said one or more
6 attributes; and
7 one or more second elements that correspond to said one or more
8 hidden columns;
9 populating said one or more first elements with said one or more first values;
10 and
11 populating said one or more second elements with said one or more second
12 values;
13 wherein said generating of said data stream is based on said data structure.

1 3. (Original) The method of Claim 2, wherein said data structure is created in memory
2 that is associated with said client application.

1 4. (Original) The method of Claim 1, wherein at least one of said one or more second
2 values is associated with said one or more first values and distinguishes said one or
3 more first values from other values in said data.

1 5. (Original) The method of Claim 1, wherein at least one of said one or more second
2 values describes a position of said one or more first values relative to other values in
3 said data.

1 6. (Original) The method of Claim 1, wherein a number of attributes of said type is not
2 defined to said client application.

1 7. (Original) The method of Claim 1, wherein a type of an attribute of said type of said
2 data is not defined to said client application.

- 1 8. (Original) The method of Claim 1, wherein said generating and said writing are
2 performed without causing a Structured Query Language (SQL) engine to load said
3 data.
- 1 9. (Original) The method of Claim 1, wherein determining said one or more routines
2 comprises locating addresses of one or more routines that are in a same entry as an
3 identity of said type.
- 1 10. (Original) The method of Claim 1, further comprising:
2 adding, to a table, an entry that indicates an association between said type and said
3 one or more routines.
- 1 11. (Original) The method of Claim 1, further comprising:
2 invoking one or more routines that are located at one or more addresses that are
3 associated with said type.
- 1 12. (Currently Amended) A method of storing data into a database, the method
2 comprising:
3 a client application receiving data that conforms to a first type definition that
4 indicates [[one]] two or more first attributes, wherein at least one of said
5 [[one]] two or more first attributes is of a type that is defined by a second type
6 definition that indicates [[one]] two or more second attributes;
7 determining one or more first routines that are associated with said first type
8 definition, wherein said one or more first routines are external to both said
9 client application and a database server that manages said database;

10 calling said one or more first routines;
11 in response to one or more calls to said one or more first routines:
12 creating a first data structure with [[one]] two or more first elements that
13 correspond to said [[one]] two or more first attributes; and
14 populating said [[one]] two or more first elements with [[one]] two or more
15 first values that are specified in said data, wherein said [[one]] two or
16 more first values correspond to said [[one]] two or more first
17 attributes;
18 calling one or more second routines that are associated with said second type
19 definition;
20 in response to one or more calls to said one or more second routines~~that are~~
21 ~~associated with said second type definition:~~
22 creating a second data structure with [[one]] two or more second elements that
23 correspond to said [[one]] two or more second attributes; and
24 populating said [[one]] two or more second elements with [[one]] two or more
25 second values that are specified in said data, wherein said [[one]] two
26 or more second values correspond to said [[one]] two or more second
27 attributes;
28 generating, based on said first data structure and said second data structure, a data
29 stream that conforms to a format of data blocks of said database; and
30 writing said data into one or more data blocks in said database.

1 13. (Original) The method of Claim 12, further comprising:

2 generating a set identifier that is associated with one of said one or more first
 3 elements; and
 4 populating a plurality of elements in said second data structure with said set identifier.

1 14. (Currently Amended) A computer-readable storage medium carrying one or more
 2 sequences of instructions which, when executed by one or more processors, causes the one or
 3 more processors to perform the method recited in Claim 1.

1 15. (Currently Amended) A computer-readable storage medium carrying one or more
 2 sequences of instructions which, when executed by one or more processors, causes the one or
 3 more processors to perform the method recited in Claim 2.

1 16. (Currently Amended) A computer-readable storage medium carrying one or more
 2 sequences of instructions which, when executed by one or more processors, causes the one or
 3 more processors to perform the method recited in Claim 3.

1 17. (Currently Amended) A computer-readable storage medium carrying one or more
 2 sequences of instructions which, when executed by one or more processors, causes the one or
 3 more processors to perform the method recited in Claim 4.

1 18. (Currently Amended) A computer-readable storage medium carrying one or more
 2 sequences of instructions which, when executed by one or more processors, causes the one or
 3 more processors to perform the method recited in Claim 5.

1 19. (Currently Amended) A computer-readable storage medium carrying one or more
 2 sequences of instructions which, when executed by one or more processors, causes the one or
 3 more processors to perform the method recited in Claim 6.

1 20. (Currently Amended) A computer-readable storage medium carrying one or more
2 sequences of instructions which, when executed by one or more processors, causes the one or
3 more processors to perform the method recited in Claim 7.

1 21. (Currently Amended) A computer-readable storage medium carrying one or more
2 sequences of instructions which, when executed by one or more processors, causes the one or
3 more processors to perform the method recited in Claim 8.

1 22. (Currently Amended) A computer-readable storage medium carrying one or more
2 sequences of instructions which, when executed by one or more processors, causes the one or
3 more processors to perform the method recited in Claim 9.

1 23. (Currently Amended) A computer-readable storage medium carrying one or more
2 sequences of instructions which, when executed by one or more processors, causes the one or
3 more processors to perform the method recited in Claim 10.

1 24. (Currently Amended) A computer-readable storage medium carrying one or more
2 sequences of instructions which, when executed by one or more processors, causes the one or
3 more processors to perform the method recited in Claim 11.

1 25. (Currently Amended) A computer-readable storage medium carrying one or more
2 sequences of instructions which, when executed by one or more processors, causes the one or
3 more processors to perform the method recited in Claim 12.

- 1 26. (Currently Amended) A computer-readable storage medium carrying one or more
- 2 sequences of instructions which, when executed by one or more processors, causes the one or
- 3 more processors to perform the method recited in Claim 13.